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10/660,947	09/12/2003	Donald James Novkov	3091.14US02	7001

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PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A.  
4800 IDS CENTER  
80 SOUTH 8TH STREET  
MINNEAPOLIS, MN 55402-2100

EXAMINER

CHU, HELEN OK

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/660,947

Applicant(s)

NOVKOV ET AL.

Examiner

Helen O. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/2004</u> | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 8, 10-13, 19-29, 31-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Eckerbom et al. (US Patent 3,817,788).

In regard to claims 1-5, 8, 10, 25-27, 31-34 the Eckerbom et al. reference discloses an anode structure from a first cell (Figure 1, Component 16), a cathode from the second cell (Figure 1, Component 14). A bipolar plate (Figure 1, Component 18) that has electroconductive rods (Figure 1, Component 30) that passes through the bipolar plate. The rods have a head portion and are holding a current collector on the bipolar plate with the head portion. The Eckerbom et al. reference also teaches a lead sulfate layer that performs as a seal (Component 32).

In regard to claims 11-13, 19, 28, 29, 35, the Eckerbom et al. reference teaches a metallic conductor that can be a grid or a plate (Column 2, Lines 32 to 34), which is aligned along the bipolar plate.

In regard to claims 20-24, The Eckerbom et al. reference illustrates a plurality of conductive rods and a plurality of conductive sheets (Figure 1-3) which maintains the structure of the spacing between the anode and cathode

3. Claims 1-5, 8, 10-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Bronoel et al. (US Publication 2001/0006745 A1).

In regard to claims 1-5, 18, 26, 27, 31-34 the Bronoel et al. reference discloses two assemblies of fuel cell are pressed on either side of the bipolar plate (Paragraph 54) in which the first fuel cell has an anode and cathode adjacent to the anode and cathode of the other fuel cell. The bipolar plate has a propylene polymer layer and conductive cylinders (Applicants' rod) that passes through the polymer layer (Paragraph 52), in which the current collector is held against the polymer layer by the head portion.

In regard to claims 10-13, 19, 28, 29 the Bronoel et al. reference teaches conductive metallic plate (Applicants foil) which is aligned with the polymer layer (Paragraph 39 and 40). Figure 2 and 3 illustrates a conductive grid viewed along the x-axis

In regard to claims 14-16, 30, the Bronoel et al. reference teaches the polymer plate comprises two channels to transport fluids where the surfaces are in contact with the electrode (Paragraph 23).

In regards to claim 8, 17, 25, 35, Bronoel et al. reference discloses the conductive sheet is sealed to the polymer layer by a protective coating of polysulfone (Applicants' thermoplastic), which is hydrophobic.

In regard to claims 20-24, The Bronoel et al. reference illustrates a plurality of conductive rods (Figure 1-3) and a plurality of conductive sheets (Paragraph 7), which maintains the structure of the spacing between the anode and cathode.

4. Claims 1-5, 8, 10-16, 19-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Cable et al. (US Patent 6,949,307 B2).

In regard to claim 1-4, 26, 31 and 33, the Cable et al. reference discloses a fuel cell stack in which the first fuel cell has an anode and cathode adjacent to the anode and cathode of the other fuel cell (Figure 2, Components 115). The bipolar plate has a polymer layer (Figure 2, Component 122) and an interconnector (Applicants' rod) that passes through the polymer layer (Figure 2).

In regards to claim 5, though the Cable et al. reference discloses conductive bond layers may be applied to the electrode surface to current distribution (Applicants' current collectors), which is held in place by the head of the rod.

In regard to claims 8, 25 and 32, the Cable et al. reference discloses a material used as a sealant (Column 12, Lines 55-64). Sealants in fuel cell stacks are known in the art to prevent leakage (Column 12, 37).

In regard to claims 10-13, 19 and 27-29, the Cable et al. reference discloses conductive interconnecting metallic sheets with flow passages (Applicant's foil or grid), which passes through the separator and aligned along the surface. (Column 3, Line 16; Column 5, Lines 38 to Column 6, Line 21).

In regard to claims 14 -16 and 30, the Cable et al. reference discloses a plenum can be associated with the interconnectors in which acts as inlets for the reactant

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gases. It is inherent that one of the reactant gases is air and it will be supplied to the cathode because that is how a fuel cell function in order to produce current (Example III).

In regard to claims 20-24, 34 and 35, the Cable et al. reference illustrates in Figure 2, that the conductive material can be a plurality of sheets (Components 124-127) and protuberances (Components 160a-160b) which the conductive material can maintain the spacing between the anode and cathode.

It is noted that claim 27 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since the conductive structure is on the polymer layer which is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cable et al. (US Patent 6,949,307 B2)

In regards to claim 6 and 7, the Cable et al. reference illustrates a rod (Figure 1, Component 60) and protrusions that are a head and a nut (Figure 1, Components 26 and 28) that are pressed against electrodes that can either be anodes or cathodes. When the protrusions are pressed against the electrodes, a deformation would occur causing the nut to be within the electrode layer.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as unpatentable over Bronoel et al. as applied to claims 1-5, 8, 10-35 above and in view Ramsey, Jr. (US Patent 5,183, 222)

The Bronoel et al. reference discloses the elements as applied to 1-5, 8, 10-16, and 19-35 above and incorporated herein. However, the Bronoel et al. reference does not disclose sealing elements comprising O-rings. The Ramsey Jr., reference discloses compression of O-rings seals the electrolytic material in electrolytic chambers and presses connector rings to the surfaces of cathodes to insure good electrical contact. Therefore, it would be obvious to one of ordinary skill at the time the invention was made to incorporate O-rings as taught by Ramsey into the elements as taught by Bronoel et al. for an efficient fuel cell and processes.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC

  
PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER